



Proposed National Average Vehicle Travel Distributions for MOBILE6

(M6.SPD.003)

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MOBILE5 Distributions

- Default assumed FTP distribution of roadway types.
- Default speed distributions were fixed.
- There was no temporal distribution of VMT.
- Some mitigation could be done outside MOBILE5.

MOBILE6 Proposal

- Model roadways separately
- Model each hour of the day
- Model distributions of link speeds
- Compute composite area-wide, daily emissions from the individual simulations.

Vehicle Miles Traveled for MOBILE6

- Distribution by roadway
- Temporal distribution (by hour)
- Distributions can be changed by the user
- User input not required

Vehicle Travel Data

- Estimates made using widely available techniques
 - Traffic count data
 - Travel demand models
- Estimates for speed
 - Highway Capacity Manual
 - Bureau of Public Roads equations

Selected Urban Areas

- Detailed information from five prototype cities
 - Charlotte, NC
 - Chicago, IL
 - Houston, TX
 - New York, NY
 - Boise, ID
- Chase car data from three additional cities
 - Baltimore, MD
 - Spokane, WA
 - Los Angeles, CA

Temporal (Hourly) Estimates

- Available for only four cities
 - Chicago
 - Houston
 - Charlotte
 - New York

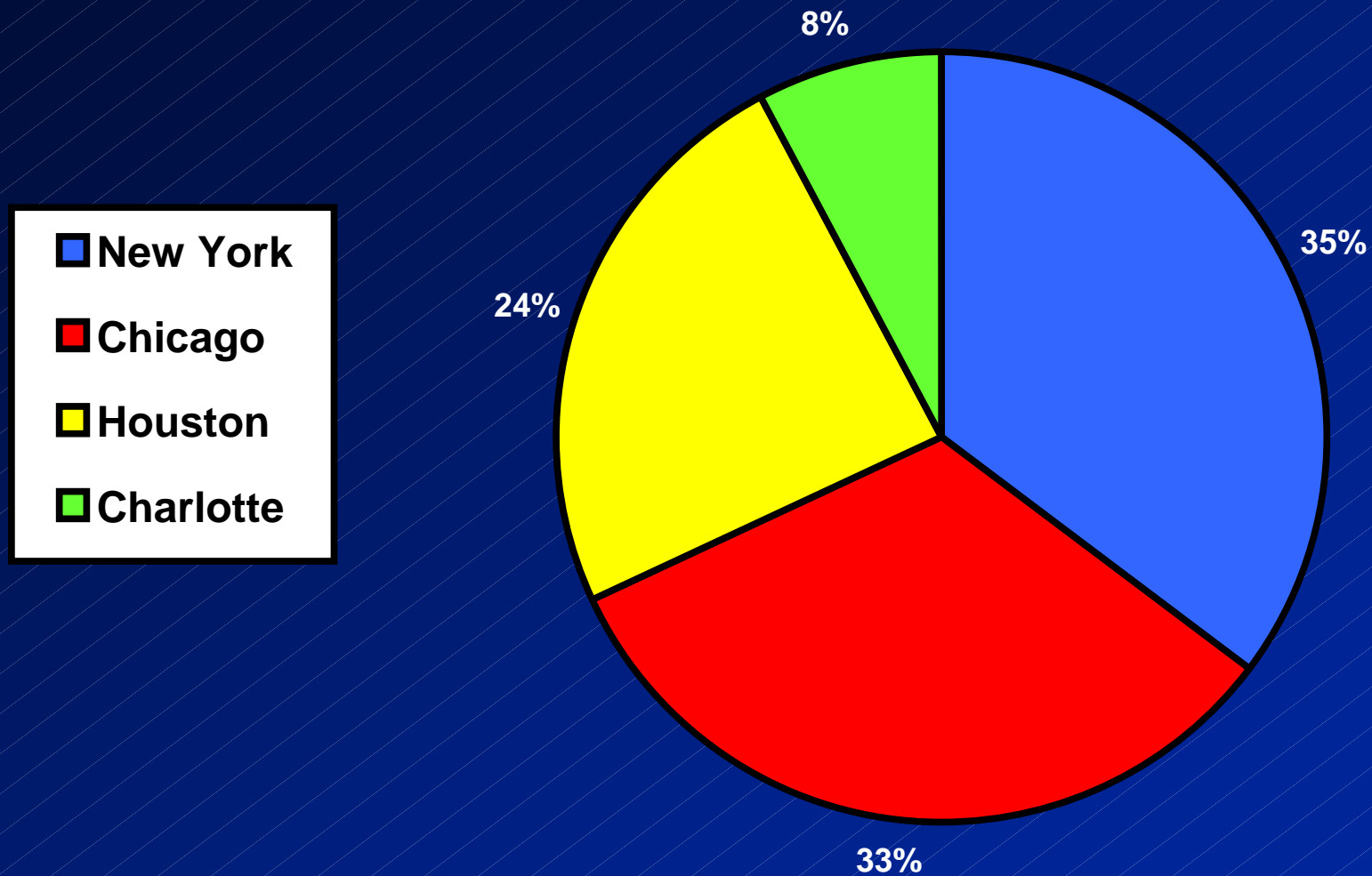
Development of National Averages

- Use the selected urban areas as surrogates.
- Associate each urban area with one surrogate.
- Weight the results by HPMS VMT.

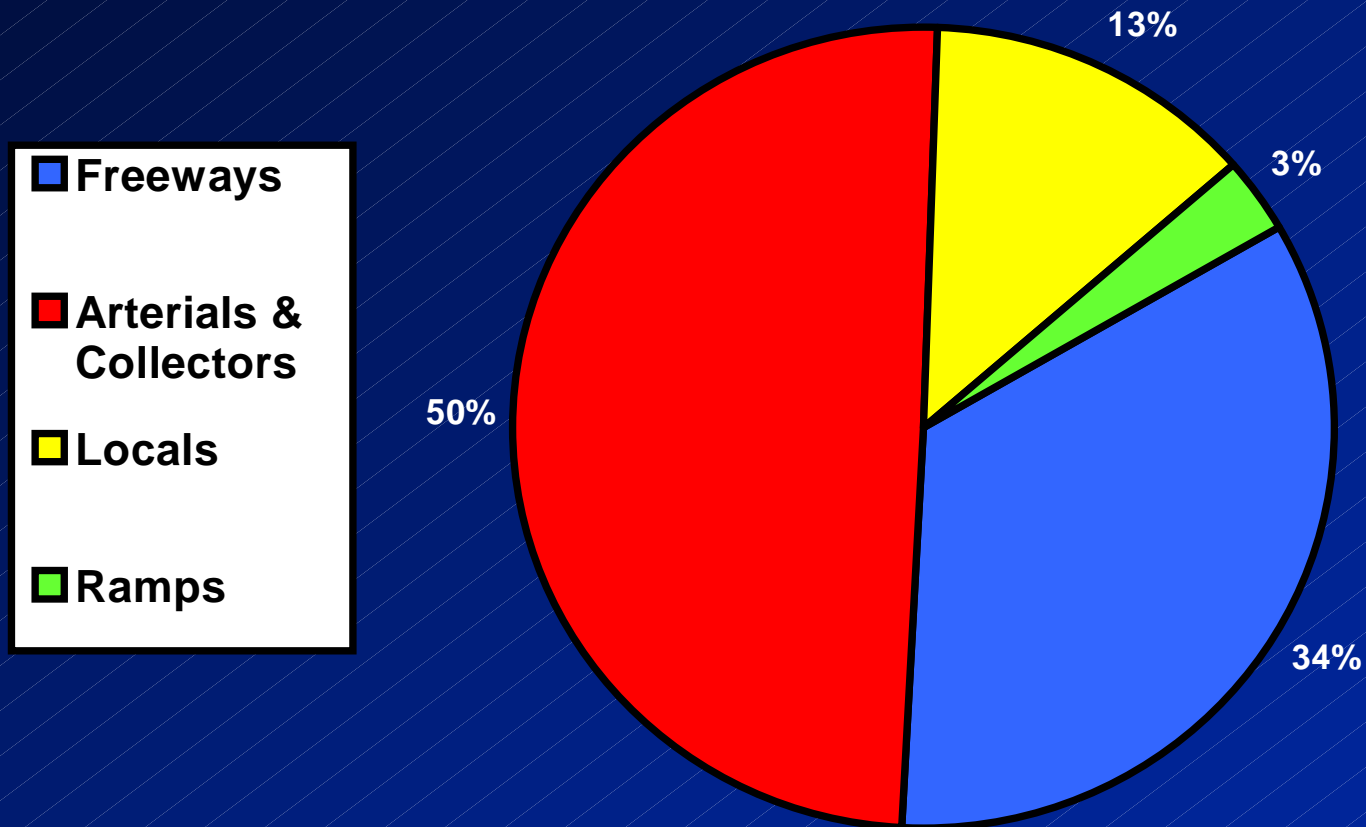
HPMS Weighting

- The “distance” from each surrogate city was calculated based on the difference in the fraction of VMT for each facility.
- Each city was associated with the surrogate city closest to it.
- Add the VMT by facility to the selected urban area.

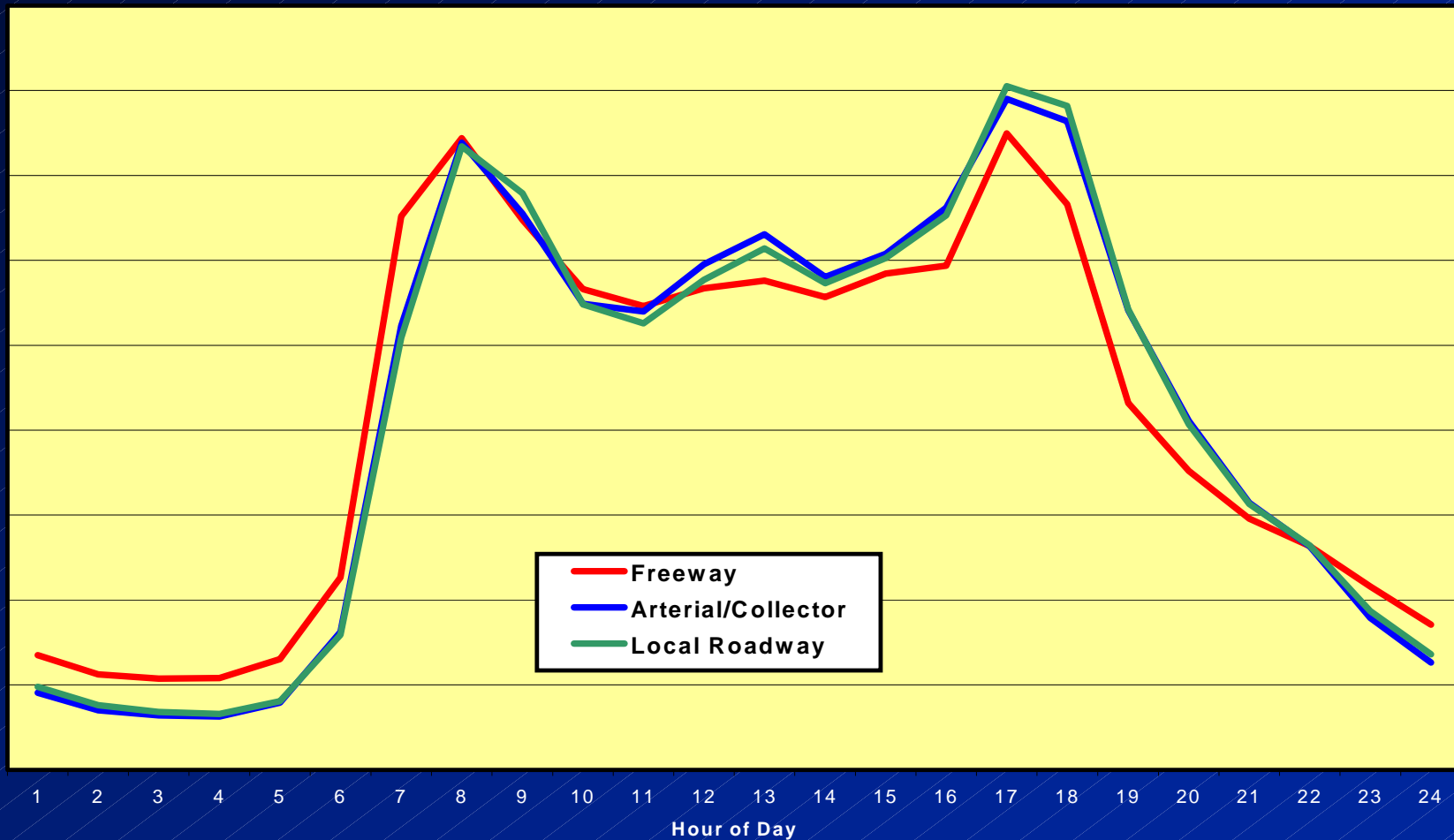
Surrogate City Weighting



Distribution of VMT by Facility



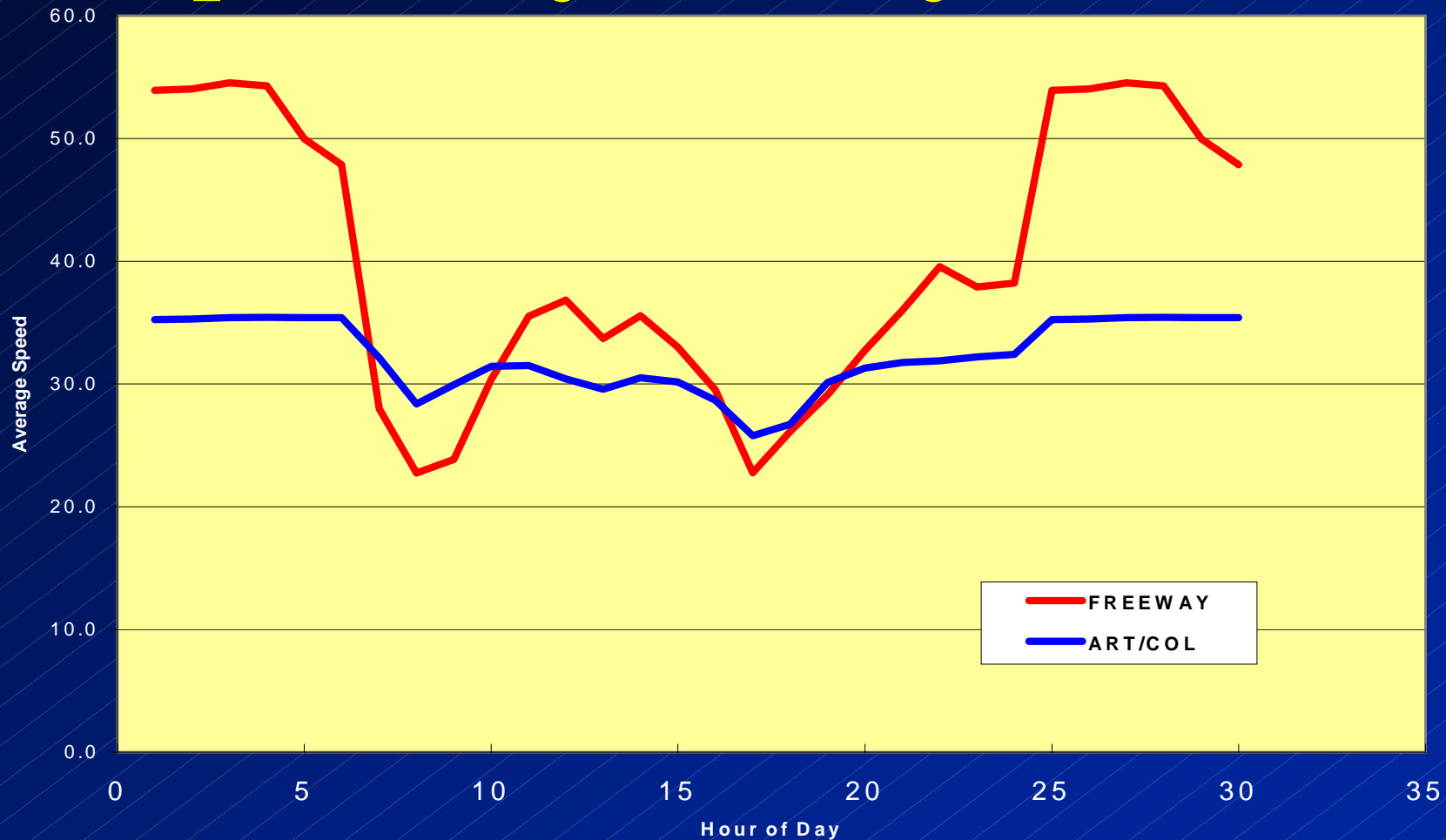
Temporal Distribution of VMT by Facility



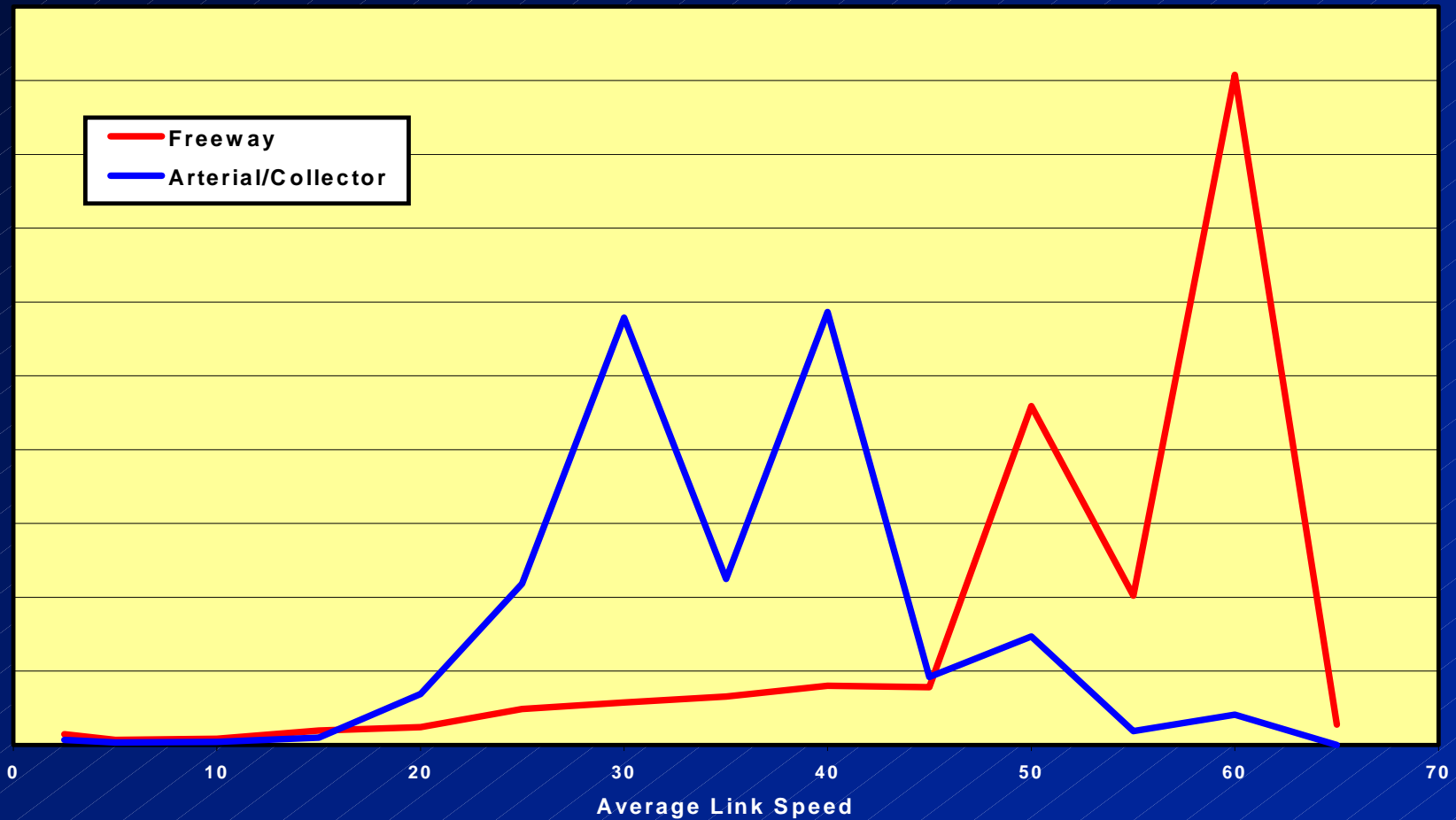
MOBILE6 Average Speeds

- Speeds will be a distribution instead of an average.
- Speeds will vary by facility (freeway/arterial).
- Speeds will vary by time of day.

Distribution of Average Speeds by Facility



Distribution of Average Speed within an Hour



Issues

- Ramp VMT was estimated assuming 8.7% of freeway VMT based on a study in Charlotte.
- Representativeness of the selected cities to represent the nation.

References

- “Development of Methodology for Estimating VMT Weighting by Facility Type” (M6.SPD.003)
- “Guidance for the Development of Facility Type VMT and Speed Distributions” (M6. SPD.004)